THE PENNY MAGAZINE

OF THE

Society for the Diffusion of Useful Knowledge.

500.] PUBLISHED EVERY SATURDAY. [JANUARY 18, 1840.

ON THE REPUTED EARLIEST PRINTED ENGLISH NEWSPAPER.

[Head of a Newspaper of the Seventeenth Century.]

IN Chalmers's 'Life of Ruddiman,' the Scottish grammarian, who was for some time editor of the 'Caledonian Mercury,' there is a dissertation on the origin of newspapers, which contains the following passage:—"After inquiring, in various countries, for the origin of newspapers, I had the satisfaction to find what I sought for in England. It may gratify our national pride to be told that mankind are indebted to the wisdom of Elizabeth and the prudence of Burleigh for the first newspaper. The epoch of the Spanish Armada is also the epoch of a genuine news-paper. In the British Museum there are several news-papers which had been printed while the Spanish fleet was in the English Channel, during the year 1588. It was a wise policy to prevent, during a moment of general anxiety, the danger of false reports, by publishing real information; and the earliest news-paper is entitled 'The English Mercurie,' which, by *authority*, 'was imprinted at London by Christopher Barker, her Hignesses printer, 1588.'" This statement of Chalmers's was put forth in 1794, nearly half a century ago, and it seems to have gratified our national vanity so much as never to have been once questioned. It has been repeated by erudite inquirers into the history of English literature, and copied over and over again in encyclopædias, magazines, books of all kinds for desultory reading, and is often given as a reading lesson in class-books for schools. Ask any schoolboy, "To whom are we indebted for the first English newspaper?" and he will reply, "To the wisdom of Elizabeth and the prudence of Burleigh."

It is somewhat provoking, after this account of the origin of newspapers has been an article of the national belief for so long a period, to discover that not only is it of doubtful and suspicious authority, but that the whole story is an imposition, and has only been successful because, though the proofs of the forgery were daily open to hundreds of persons, the spirit of critical inquiry was never directed to a question which had been apparently placed on the firmest foundations by Chalmers and succeeding writers of greater authority who had in a great measure depended upon his statements. But the gravest and most deeply-cherished errors are always in danger, either from the sudden giving way of the foundations on which they rest, or from the more certain process of sapping and mining. "On the 4th instant," says Mr Watts,* of the British Museum, "I was induced to refer to the 'English Mercurie,' by a consideration respecting it suggested in the article 'Armada' in the 'Penny Cyclopædia;'" and Mr. Watts then observes,—"On the book being brought, I had not examined it two

* 'A Letter to Antonio Panizzi, Esq., keeper of the printed books in the British Museum, on the Reputed Earliest Printed Newspaper, "The English Mercurie, 1588," by Thomas Watts, of the British Museum.' This letter is dated Nov. 16th, 1839. Considerable doubts were entertained respecting the genuineness of the 'English Mercurie' before the date which Mr. Watts assigns for the origin of his first suspicions on this point. In part lxxxii. of the 'Penny Cyclopædia,' published at the end of November, this doubt is distinctly expressed by the writer of the article 'Newspapers,' whose manuscript was in the editor's hands before the 4th November. After stating that copies of the 'English Mercurie' are in the British Museum, the writer observes:—"It must not however be concealed that doubt is entertained of the genuineness of these papers. Two of them are not of the time, but printed in modern type; and no originals are known: the third is in manuscript of the eighteenth century, altered and interpolated with changes in old language, such only as an author would make."

minutes, before, to my surprise, I was forced to conclude that the whole was a forgery." This suspicion was confirmed by the examination of other literary antiquarians; and as Mr. Watts remarks, "the unaccountably successful imposition of fifty years was shattered to fragments in five minutes."

We are bound, however, to lay before the reader the proofs on which it is asserted that "the claims of the English to the invention of printed newspapers are unfortunately of no validity, and that the 'earliest newspaper' in the Museum is an imposture."

We shall pass over several of the minor circumstances which Mr. Watts regards as conclusive, but are too weak in themselves to sustain the proof of forgery. The evidence must rest principally on the following points:— 1. The type employed is not that of the period, but that of a century ago. "The distinction between the u's, v's, and the i's and j's, utterly unknown to the printers of the sixteenth century, is here maintained throughout in all its rigour." 2. Though the orthography of the sixteenth century was capricious, yet it had certain peculiarities sufficiently marked to separate it from that of the eighteenth century. Mr. Watts has compared the 'English Mercurie' with a work entitled 'A Pack of Spanish Lyes,' printed by the deputies of Christopher Barker, in 1588; and if the 'Mercurie' had issued from the same printing-office, in the same year as the book in question, there would at least have been many points of orthographical uniformity; but in this respect the two works are "almost always at variance." The name of the lord-admiral's ship, which, in the 'Pack of Spanish Lyes' is spelt the 'Arke Royall,' is spelt in the 'Mercurie' the 'Ark Royal.' 3. The style of composition is not of the date to which it pretends. Words, phrases, and modes of expression are made use of which were either unknown at the time or were employed in a sense which did not become familiar to English ears until a period much later than the date of the 'Mercurie.' Thus the word 'regiments' is used; while Hakluyt, ten years afterwards, when writing of the Spanish Armada, is compelled to give an explanation of the word. "There were in the said naule five *terzæs* of Spaniards (which *terzaes* the Frenchmen call regiments)." Other instances of a similar kind might be given. 4. Mr. Watts is of opinion that an article of news in the 'Mercurie' of July 23rd, 1588, purporting to give an account, written by the lord-admiral, of events of which we now possess a most minute relation, could only be the work of a newspaper manufacturer copying from a confused statement of the same events by Camden. 5. The three printed copies of the 'Mercurie' preserved in the British Museum are numbered 50, 51, and 54; and the manuscript copy of two others, intended to have been Nos. 52 and 53. Nos. 50, 51, 52, and 53 are all dated July, 1588; and No. 54 commences with the date Monday, November 24th in the same year, the three (or nearly four) intervening months being a period of most exciting interest, and marked by the extremes of national alarm and national exultation at the appearance and defeat of the Armada. "Is it possible to believe," asks Mr. Watts, "that, under these circumstances, a statesman who had already issued fifty-three numbers of a newspaper, four of them in the course of eight days, would allow August, September, October, and almost the whole of November, to pass by without publishing a fifty-fourth?" 6. As to the manuscript copies of the 'Mercurie' which are bound up with the printed copies, Mr. Watts shows that they contain "the most convincing, the most irrefragable evidence that the whole affair is a fraud." The hand-writing of the manuscript is as modern as the type of the printed copies, and the spelling is modern spelling; while in the printed copies the printer has endeavoured to give the spelling "the proper antique flavour," and has not succeeded very well. These manuscript copies are not a transcript from some earlier printed copy not found or known to exist. "The alterations in the manuscripts are not those of a transcriber, but of an author." Mr. Watts prints a long verbatim extract from the manuscript to show that the alterations are "so very numerous, that a transcriber who could perpetrate such a series of blunders must be a moral phenomenon;" and he remarks, lastly, that "the corrections are, in many cases, themselves corrected; sometimes by a return to the original statement or mode of expression, a circumstance likely to occur often in the alterations of an author, but never in the corrections of a copyist." Moreover the paper bears the water-mark of the royal arms, with the initials 'G. R.' Nor is the difficulty overcome by assuming that not only is the manuscript a transcript from the copy as originally written, but the printed copy is also a reprint, as it would be impossible that so remarkable a work as the 'Mercurie' should have been in existence after the middle of last century, when it had attracted some curious antiquarian, who caused not only written but printed copies to be made of it, and that it should now be lost and nothing known of its history.

It appears, from the letter of Mr. Watts, that the 'English Mercurie' came into the British Museum in 1766, on the death of Dr. Birch, to whose collection they belonged. There were three accomplished literary forgers of the period, Chatterton, George Steevens, and William Rufus Chetwood. In 1766 Chatterton was only fourteen years of age, and was at a charity-school in Bristol. The manuscripts are neither in the hand-writing of Steevens nor Chetwood; but either of these characters, after having devised the forgery, might have left its execution to an accomplice. The question "Who was the forger?" is an interesting one, and will doubtless excite the attention of the curious in questions of literary history. Mr. Watts's opinion of the printed and manuscript copies is that "the printed copies were got up for the purpose of imposition, that the attempt was detected, and that the whole of the papers were preserved as a memorial of the occurrence." Still it is singular, if Dr. Birch were aware of this unprincipled attempt, that he should neither have made it public in his lifetime, nor left any record behind him concerning it.

The invention of printed newspapers, as it cannot be claimed by England, is now a matter of interesting dispute and inquiry. It does not belong to France; for in the 'Paris Gazette,' begun in the year 1631, it is remarked in the dedication to the king at the beginning of the first volume, that the publication of gazettes "is indeed a novelty, but in France only." It will probably be found that the honour belongs either to Venice or Nuremberg.

In England we had without doubt genuine newspapers very early in the seventeenth century, that is, some twenty years only after the date of the fictitious 'Mercurie;' but, as it is remarked in the 'Pictorial History of England,' the *æra* of English newspapers commences with the first year of the Long Parliament (1640). More than a hundred newspapers, with different titles, appear to have been published between this date and the death of the king (1649), and upwards of eighty others between that event and the Restoration (1660). Chalmers, in his 'Life of Ruddiman,' informs us that "when hostilities commenced, every event during a most eventful period had its own historian, who communicated 'News from Hull,' 'Truths from York,' 'Warranted Tidings from Ireland,' and 'Special Passages from several places.' These were all occasional papers. Impatient, however, as a distracted people were for information, the news were never distributed daily. The various newspapers were published weekly at first; but in the progress of events and the ardour of curiosity, thy were distributed twice or thrice in every week. Such were the 'French Intelligencer,' the 'Dutch Spy,' the 'Irish Mercury,' and

the 'Scots Dove,' the 'Parliament Kite,' and the 'Secret Owl.'"

At the conclusion of his letter Mr. Watts directs attention to an error which has obtained almost as extensive a currency as that concerning the origin of newspapers. "'The Gentleman's Magazine,'" he observes, "unaccountably passes for the first periodical of that description, while, in fact, it was preceded nearly forty years by the 'Gentleman's Journal' of Motteux, a work much more closely resembling our modern magazines, and from which Sylvanus Urban borrowed part of his title and part of his motto; and while on the first page of the first numbers of the 'Gentleman's Magazine' itself, it is stated that it contains 'more than any book of the *kind* and price.'"

ANECDOTES OF AMERICAN HORSES.

[From a Correspondent.]

THERE are various instances on record fully establishing the courage and sagacity of that noble animal the horse. The following incidents I am about to relate occurred in America, to horses bred in that country.

A short distance below Fort Erie, and about a mile from where the river Niagara escapes over a barrier of rock from the depths of Lake Erie, a ferry has long been established across that broad and *there* exceedingly rapid river, the distance from shore to shore being a little over one-third of a mile. On the Canada side of the river is the small village of Waterloo, and opposite thereto on the United States side is the large village of Blackrock—distant from the young and flourishing city of Buffalo two miles. In completing the Erie Canal, a pier or dam was erected—up and down the river, and opposite to Blackrock, at no great distance from the shore, for the purpose of raising the waters of the Niagara to such a height that they might be made to supply an adjoining section of the Erie canal. This pier was (and is) a great obstruction to the ferry-boats; for previous to its erection passengers embarked from *terra firma* on one side of the river, and were landed without any difficulty on the other; but after this dam was constructed it became necessary to employ two sets of boats—one to navigate the river, and the other the basin; so that all passengers, as well as goods or luggage, had to be landed upon this narrow wall or pier, and re-shipped.

Shortly after the erection of the pier dam, a boat propelled by horses was established between this pier and the Canada shore. The horses moved upon a circular platform, which consequently was put in motion, to which other machinery was connected, that acted upon paddle-wheels attached to the sides of the boat. The boat belonged to persons connected with the ferry on the American side of the river; but, owing to the barrier formed by the pier, the horses employed on the boat were stabled at night in the village of Waterloo. I well recollect the first day this boat began to ply,—for the introduction of a boat of that description, in those days, and in such a situation, was considered an event of some magnitude. The two horses (for *that* boat had but two) worked admirably, considering the very few lessons they had had (upon the tread-mill, as it was called) previous to their introduction upon the main river.

One of the horses employed on the new ferry-boat had once been a dapple-grey, but at the period I am speaking of he had become white. He was still hale and hearty, for he had a kind and indulgent master. The first evening after the horses had been a short time in the stable, to which they were strangers, they were brought out for the purpose of being watered at the river, the common custom at this place. The attendant was mounted upon the bay horse,—the white one was known to be so gentle and docile, that he was allowed to drink where he pleased. I happened to be standing close by, in company with my friend W———n, the ferry contractor on the Canada side, and thus had an opportunity of witnessing the whole proceedings of old Grizzle, the name that the white horse still went by. The moment he got round the corner of the building, so as to have a view of his home on the opposite side,—he stopped—and gazed intently. He then advanced to the brink of the river,—when he again stopped and looked earnestly across for a short time;—then waded into the water until it had reached his chest—drank a little, lifted his head; and, with his lips closed, and his eyes fixed upon some object upon the farther shore, remained for a short time perfectly motionless. Apparently having made up his mind to the task, he then waded farther into the river until the water reached his ribs,—when off he shot into deep water without a moment's more hesitation.

The current being so strong and rapid, the river boiling and turmoiling over a rocky bed at the rate of six miles the hour, it was impossible for the courageous and attached animal to keep a direct course across, although he breasted the waves heroically, and swam with remarkable vigour. Had he been able to steer his way directly across, the pier-wall would have proved an insurmountable barrier. As it was, the strength of the current forced him down to below where the lower extremity of this long pier abuts upon an island, the shore of which being low and shelving, he was enabled to effect a landing with comparative ease. Having regained *terra firma*, he shook the water from his dripping flanks, but he did not halt over a few minutes, when he plunged into the basin and soon regained his native shore.

The distance from where Grizzle took the water to where he effected a landing on the island was about seven hundred yards; but the efforts made to swim directly across, against the powerful current, must have rendered the undertaking a much more laborious one. At the commencement of his voyage his arched neck and withers were above the surface, but before he reached the island nothing but his head was visible to us.

He reached his own stable-door, that home for which he had risked so much, to the no small astonishment of his owner. This unexpected visit evidently made a favourable impression upon his master, for he was heard to vow, that if old Grizzle performed the same feat a second time, for the future he should remain on his own side of the river, and never be sent to the mill again. Grizzle was sent back to work the boat on the following day, but he embraced the very first opportunity that occurred of escaping, swam back in the way he had done before, and his owner, not being a person to break the promise he had once made, never afterwards dispossessed him of the stall he had long been accustomed to, but treated him with marked kindness and attention.

During my residence on the head-waters of the Susquehana, I owned a small American horse, of the name of Charlie, that was very remarkable for his attachment to my own person, as well as for his general good qualities. He was a great favourite with all the family; and being a favourite, he was frequently indulged with less work and more to eat than any of the other horses on the farm. At a short distance from the dwelling-house was a small but luxuriant pasture, where, during the summer, Charlie was often permitted to graze. When this pasture had been originally reclaimed from its wild forest state, about ten years previous to the period of which I am speaking, four or five large trees of the sugar-maple species had been left standing when the rest were cut down, and means had afterwards been found to prevent their being scorched by the fire at the time the rest of the timber had been consumed. Though remarkably fine trees of their kind, they were, however, no great ornament, their stems being long and bare, their heads small and by no means full of leaves,—the case generally with trees

that have grown up in close contact with each other in the American forests. But if they were no ornament, they might serve as shade-trees. Beneath one of these trees Charlie used to seek shelter, as well from the heat of the meridian sun, as from the severe thunder-gusts that occasionally ravage that part of the country. On an occasion of this sort Charlie had taken his stand close to his favourite tree, his tail actually pressing against it, his head and body in an exact line with the course of the wind; apparently understanding the most advantageous position to escape the violence of the storm, and quite at home, as it were, for he had stood in the same place some scores of times. The storm came on, and raged with such violence that the tree under which the horse had sought shelter was literally torn up by the roots. I happened to be standing at a window from whence I witnessed the whole scene. The moment Charlie heard the roots giving way behind him, that is, on the contrary side of the tree from where he stood, and probably feeling the uprooted tree pressing against his tail, he sprang forward, and barely cleared the ground upon which, at the next moment, the top of the huge forest-tree fell with such a force that the crash was tremendous, for every limb and branch were actually riven asunder. I have many a time seen horses alarmed, nay, exceedingly frightened; but never in my life did I witness any thing of the sort that bore the slightest comparison to Charlie's extreme terror; and yet Charlie, on ordinary occasions, was by no means a coward. He galloped, he reared his mane, and tossed his head, he stopped short, and snorted wildly, and then darted off at the top of his speed in a contrary direction, and then as suddenly stopped and set off in another, until long after the storm had considerably abated, and it was not until after the lapse of some hours that he ventured to reconnoitre—but that at a considerable distance—the scene of his narrow escape.

For that day at least his appetite had been completely spoiled, for he never offered to stoop his head to the ground while daylight continued. The next day his apprehension seemed somewhat abated, but his curiosity had been excited to such a pitch that he kept pacing from place to place, never failing to halt as he passed within a moderate distance of the prostrate tree, gazing thereat in utter bewilderment, as if wholly unable to comprehend the scene he had witnessed the preceding day.

After this occurrence took place I kept this favourite horse several years, and during the summer months he usually enjoyed the benefit of his old pasture. But it was quite clear that he never forgot, on any occasion, the narrow escape he had had; for neither the burning rays of the noontide summer sun, nor the furious raging of the thunder-storm, could compel Charlie to seek shelter under one of the trees that still remained standing in his small pasture.

HISTORY OF A COTTON GOWN.—No. II.

[The little wheel, commonly called the Leipsic or Saxony wheel.

IT frequently happens that the principle which pervades an important process, or which is the distinguishing feature in a complex machine, may be better understood by a consideration of the primitive or rude modes of proceeding than by describing at once those of modern date. We think that this remark is applicable on the present occasion. We have brought the materials for our cotton gown to that state where the labours of the

spinner are required. Now in order to form some idea how the *spinning-jennies*, *throstle-frames*, and *mules* perform this operation, we will briefly consider the *domestic* mode of spinning, now almost unknown in this country on account of the cheapness of machine-spun yarn.

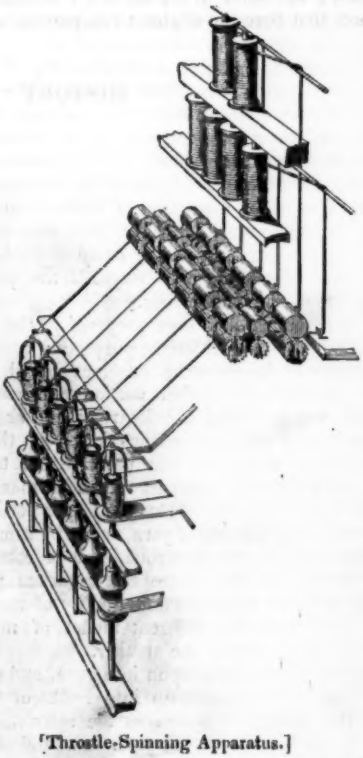
The object of spinning is to draw out the *rovings* of cotton (which are soft and easy to be broken), and *twist* them round their centre until all the fibres are so curled as to form a tolerably firm thread—not such as is used for sewing, but such as is employed by the weaver under the name of *yarn*. This used to be effected by means of a wheel similar to that represented in the cut given in the 'Penny Magazine,' No. 274, commonly called the big wheel. The spinster is seated on a stool, and takes one of the bobbins in her lap. Unfastening one end of the roving, she attaches it to the end of a horizontal spindle, which is so connected to a large wheel as to be set in rotation by it. The spinster, holding the cotton in the left hand, draws her hand back to some distance from the spindle; and then, by turning the wheel with her right hand, *twists* the portion of cotton extending from the spindle to her left hand. When this is twisted into a tolerably firm yarn or thread, she winds it on the spindle by reversing the motion of the wheel. The main principle in this operation is this, that by stretching out a portion of the cotton, and causing the spindle, to which one end of it is attached, to revolve, the cotton invariably receives a *twist*, which condenses and hardens the assemblage of fibres. The little wheel, of which we have given a representation above, occupied the fore-finger and thumb of both hands, those of one hand holding the filaments, while the other drew them out into an equable thread. Sometimes two spindles were attached, and the spinster could then form a thread with each hand. The twisting and winding of the thread were also carried on together by means of an ingenious piece of mechanism. This wheel, however, was chiefly used for flax.

In a way very similar to this was conducted the spinning of almost all the cotton employed in this country until about 1760. It used to be done by the wives and daughters of cottagers by their own fire-sides. The cotton-weavers of that day were accustomed to work at their own houses; and as each weaver could weave as much yarn as three women could spin with their wheels, he was obliged, after having worked up that which his wife and daughters had spun, to apply to the spinsters of the neighbourhood for a further supply. When the demand for cotton goods increased, the supply of spun-yarn was so inadequate, that a weaver was frequently under the necessity of trudging three or four miles in a morning, and visiting many spinners, before he could collect yarn enough to keep his loom at work during the rest of the day; and such was the competition he met with from other weavers similarly employed, that he was often obliged to treat the females with presents in order to quicken them at their work.

This was a critical period in the history of our cotton manufacture; for had not some machine been invented to accelerate the production of spun-yarn, the supply would have been obtained from other countries instead of our own. This was prevented by the labours of James Hargreaves, who invented the *spinning-jenny*. This was a machine formed on the basis of the spinning-wheel, but differing from it in these important particulars, that the wheel which the spinner turned with his right hand set in rotation several dozen spindles instead of a single one; and a frame which he held in his left hand guided and managed several dozen threads instead of one single thread; in fact, the machine was equivalent to multiplying the number of hands, both right and left, possessed by the spinner. Hargreaves met with a return that too often falls to the lot of those who benefit mankind: his house was broken open and his machine destroyed by the envious spinners of the neighbourhood.*

The invention once made, however, was not lost to society. A variety of improvements, chiefly by Arkwright and Crompton, were brought to bear in the spinning apparatus. These improvements are all susceptible of being separated into two classes, one in which there is a moveable frame of some kind to stretch out the threads before they receive their twist, and another in which that motion is dispensed with. A cottage spinster, who moves her left hand alternately to and from her spindle, works on the first-named plan: the spinning-jenny of Hargreaves acted on the same plan by the movement of a frame to which the threads were attached: lastly, Crompton invented the *mule-jenny*, in which the threads were stretched by the movement of a little four-wheeled carriage instead of the hand-frame of the spinning-jenny.

On the other hand, a different kind of spinning action was produced by Arkwright's *water-twist frame*, and by a more recent form of machine called the *throstle*. The most essential parts of these machines may be seen from the annexed cut. In the upper part are several



[Throstle-Spinning Apparatus.]

bobbins, containing cotton roving, as brought from the roving-machine. By the rotation of these bobbins the roving is unwound; and after passing over a slender bar, is carried between some pairs of horizontal rollers, which, by a varying velocity, have the effect of drawing or stretching the cotton. The roving from each bobbin then passes down one prong of a curious kind of fork, called a *flier*, and as this flier rotates round a little pirn or bobbin, the cotton, which becomes firmly twisted by the rotation of the flier, is wound on the bobbin in the form of *yarn*. The bobbins are made to rotate by a band passing round the spindles beneath them.

There are many elaborate pieces of mechanism connected with the spinning apparatus, but it would be im-

* See a wood-cut of this machine, in No. 274.

possible to mention them here. Indeed the reason why we have described the difference between *mule-spinning* (that in which a frame travels to and fro) and *throstle-spinning* (that in which a fork-like flier revolves round the spindle) is, because the yarn produced is of different quality in the two cases. Arkwright's machines were of the latter description, and were fitted to spin *warp*, or long threads, and hosiery yarn, of a stout quality; while Hargreave's *jenny* was fitted to produce a soft yarn for *weft*, and for many years all our cottons were made according to those respective qualities. The improvements in both classes of machines have not changed their *relative* character, for Dr. Ure says—"The *mule* makes a definite length of yarn, after which it winds it up while the operation of spinning is suspended; whereas the throstle makes the yarn and winds it up simultaneously. The *mule* is used generally for all numbers above 30's (a technical name for a certain thickness of yarn), *throstles* being now seldom used to spin so high as 40's. The quality of the yarn produced by the two machines is quite different. The throstle yarn, known under the name of *water-twist* (from having been first produced by the machine called a *water-frame*) is smooth and wiry; while the mule-yarn is of a soft and downy nature. The former is usually employed for *warps* in heavy goods, such as fustians, cords, or for making sewing-thread; and the latter for *weft* in coarse goods; as also for both warp and weft in finer fabrics."*

The reader may perhaps be surprised that the material for our cotton gown is not further advanced—that it is yet only thread, mere thread. But the truth is, that the processes which precede *weaving* are of infinitely greater importance than weaving itself. The production of good yarn was deemed by our Arkwrights, Hargreaves, and Cromptons, as more deserving of their study than the weaving of that yarn into cloth. Weaving is, however, of great importance, and is only *comparatively* shrouded by the vast efforts made to improve the processes of carding, drawing, spinning, &c.

The yarn which has been prepared in the modes described is devoted to different purposes; some is made into bobbin-net thread, some into lace-thread, some into stocking-thread, and another portion into sewing-cotton or thread, which is sold in balls, reels, and skeins. For the preparation of these various kinds of thread, two, three, or four yarns are laid parallel and twisted together into a firm and compact thread by machines constructed for the purpose. But the larger portion is used by the weaver in the state of yarn, and is by him converted into calico and all the numerous kinds of cotton fabrics. The difference between these fabrics arises principally from the different thickness and quality of the yarn employed, and from the different modes of making the threads interlace among one another.

When cotton has been spun into yarn, and is destined for the market, it is made up into hanks of 840 yards each. But when it is woven in the same manufactory where it has been spun, the yarn is wound off from the small bobbins upon larger ones. Several of these bobbins are then taken to a machine called the *warping-mill*, where, by a beautiful train of operations, from two to four thousand threads are ranged and stretched side by side: these form the *warp* of the intended piece of cloth, and the number of threads varies with the width which the cloth is intended to be. Most cottons in the next operation receive a coating of glue, size, paste, or starch. The object to be attained by this seems to be sometimes to facilitate the weaving, sometimes to impart a certain degree of strength to the cotton, and at others the less creditable one of making them appear more stout and compact than they really are. Formerly the sizing, or *dressing*, was done by hand; but it is now effected in an ingenious machine, in which the yarn dips into a trough of paste or size—passes between two rollers to have a portion of that covering squeezed from it—then over a hollow chamber heated by steam, by which the paste is dried,—and is finally wound on a large roller called a warp-beam: all these effects are produced while the yarn is travelling from one end to the other of the machine. The warp-beam, with the yarn upon it, is then conveyed to the weaving-loom.

The yarn just alluded to is to form the *warp*, or longitudinal thread, of the cloth. The yarn for the weft is fastened up into hanks, and from thence transferred by the weaver to his shuttle. We may here remark, in connection with these hanks, that the *number* attached to any particular quality of yarn represents the number of hanks to the pound, the hank always containing 840 yards. Thus we have No. 40, 60, 80, &c. The last-named quality was deemed a wonder when Crompton's spinning-apparatus first produced it, and he obtained two guineas per pound for it; but such have been the improvements since his day, that even a finer quality, No. 100, can be procured for three shillings per pound; while the power of producing exquisitely fine yarn has advanced to such a degree, that as high a number as 350 has been produced, that is, 350 hanks of 840 yards each, or 294,000 yards, to the pound.

Weaving will be briefly described in the next paper; but we may here remark that it was the impetus given to the cotton manufacture by the improvements in spinning that led to the substitution of power or machine weaving for hand-weaving. The foot and the hand of the weaver were found to move too slowly for the demand of the market. It was said by Dr. Cartwright:—"Happening to be at Matlock in the summer of 1784, I fell in company with some gentlemen of Manchester, when the conversation turned on Arkwright's spinning-machinery. One of the company observed, that as soon as Arkwright's patent expired, so many mills would be erected, and so much cotton spun, that hands never could be found to weave it: to this observation I replied, that Arkwright must then set his wits to work to invent a weaving-mill." This conversation was the exciting cause of the production of a loom for which Dr. Cartwright received 10,000*l.* from parliament, and which was followed by repeated improvements: the result of this has been, that a weaver can produce twenty pieces of cloth in the time formerly necessary to produce two.

* 'Cotton Manufacture of Great Britain,' vol. ii., p. 119.

SNOW-STORMS IN MOUNTAIN DISTRICTS.

[From a Correspondent.]

THOSE who have never witnessed the great accumulation of snow which takes place during some severe winters in the mountainous district of the north of England, as well as of Scotland, would scarcely credit the extent, the length, the breadth, and the depth of some of the immense masses of snow that accumulate in certain situations among the mountains; and many persons there are, no doubt, who are totally ignorant of the fact, that in every mountain district of the north there are snow-drifts that *never* wholly dissolve and disappear, but fragments of which remain from season to season, and from year to year, in the hollows and declivities of the mountains (for the most part where the aspect is northerly), notwithstanding the copious and frequent falls of spring and autumn rain, to which these mountain districts are peculiarly liable, and the dissolving influence of the gentle breezes of summer. These fragments of the winter snow-drifts are seldom visible from the roads and highways leading through the open and more distant part of the country, or even along the adjacent valleys, and consequently their existence is known only to those who are familiar with the situations they are known to occupy. In these upland districts but small quantities of grain are grown, the soil for the most part being unsuited to corn crops, while the climate is even more so. Hence

the farmers turn their attention to the breeding of sheep and black cattle, the mountain districts of the north of England being mostly sheep-farms; while in various parts of the hilly country in Scotland large numbers of black cattle are bred and sent to the southern markets.

In the sheep districts in the north of England the farms are seldom large, and yet many of the farmers manage to keep pretty numerous flocks of sheep, varying from three or four hundred to the same number of thousands. This, however, is effected only where population is scanty, and where the commons (usually called fells) are very extensive, and upon which the owners or occupiers of the enclosed land or farms enjoy an unlimited right of pasturage. or common right, as it is generally called. Hence it frequently happens that the occupier of 80 or 100 acres of enclosed land, and much of it of but an indifferent quality, if he possess sufficient capital, and the farm be conveniently situated, will keep a flock of sheep of 1000 or 2000 of the small black-faced or mountain breed, the whole of which he summer-pastures on the fells or moors; but a considerable portion of which, particularly the younger and weaker part, he has to send out, at so much per head, into some more congenial part of the country, during the winter season. He could not, however, afford to pay for winter pasturage for the whole of his flock, and therefore the greater portion remains in his own enclosures, or on the lower ranges of mountain-land contiguous thereto, during the winter, endeavouring to procure a scanty subsistence among the heath, the rushes, and the bent grass, in the best way they are able. But when the snow lies deep, and the weather is very severe, these animals, hardy as they undoubtedly are, would absolutely starve were they not supplied with a little hay from the homestead. The hay is commonly borne on the heads or backs of the shepherds, in bundles as large as they can possibly wade through the snow with; but occasionally on the backs of horses, where they can travel without much danger or difficulty. The hay is secured into a species of rude net-work formed of withies, and known by the local appellation of creels, in which loose hay, as well as that which is more solid, may be packed firmly and securely. When a snow-storm is of long continuance, the shepherds have enough to do in preventing their flocks straying away, and in supplying them with hay once or twice in the day, according to the severity of the weather; for wading through deep snow, with a heavy load on the head or shoulders, and often where the ground is hilly and broken, is a very laborious business.

Though there are neither fences nor other landmarks on those extensive mountain-ranges, from long usage, or some supposed right or claim, almost every sheep-farmer appears to consider that he possesses some peculiar privilege to the pasturage of that part of the common on which his flock usually feeds. Hence these flocks are rarely much intermixed with each other, the owners or their shepherds taking the liberty to drive or frighten away such of their neighbour's sheep as chance to mix among their own. Although this sort of arbitrary exclusiveness occasionally leads to bickerings and animosities between the parties whose flocks come thus in collision, it certainly prevents a great deal of trouble in separating and assorting at the seasons of sheep-washing, sheep-shearing, sheep-salving, &c., when each flock has necessarily to be divested of all intruders. It does not often happen that these extensive commons are overstocked, notwithstanding there being no limit to the number of sheep in any farmer's flock; but since the pasturage is of so poor a nature that, even when there is abundance of room, and to spare, for all the sheep that may be kept, the flocks never arrive at a high state of condition—nothing like that of fitting them for the shambles,—in case of any crowding or overstocking taking place, the reduced condition of the whole would be a serious consideration to all the parties concerned.

Though sheep, like most other animals, appear to be endowed with a certain degree of instinct, yet it does not follow, as a matter of course, that it always operates towards ensuring their safety. Persons who have had the most frequent opportunities of observing them generally, appear to have come to this conclusion, that when a storm is approaching they are seldom taken by surprise; or, in fact, before it actually comes on, they have endeavoured to find a place to shelter themselves from its fury: but in cases of snow-storms among the mountains, it very generally happens that the places of shelter from the bitter and piercing blast are places fraught with the greatest danger, for it is there that the drifting snow accumulates in vast masses; and while the flocks that have sought shelter are comparatively warm and comfortable, probably before they are aware the drift will have become piled up in such a manner as to render all attempts to retreat impracticable even were they inclined to do so. Thus it sometimes happens that in the space of a very few hours some scores, nay, perhaps hundreds, of sheep become buried beneath the snow to a depth of several feet. In most parts of these mountain-regions, where the hills are pretty steep, their sides are usually furrowed by several clefts, or deep and narrow ravines, down which trickle the waters of small springs that commonly have their rise in the upper parts of the mountain. The spaces along the sides of the hills, between these respective furrows or dells, for the most part are smooth and bare; so that at the approach of a snow-storm, should these places be resorted to by the flocks as places of shelter, they are soon buried to a considerable depth, since all the snow that falls on the smooth portions of the mountain is hurled into these dangerous ravines.

When a snow-storm comes on unexpectedly, the losses in the flocks of sheep are generally the greatest; for when it is foreseen, the shepherds are on the alert; and though it may not be within their power to prevent some portion of the flock being buried (overblown, as they call it) beneath the snow, yet, in most cases, they are aware of the situation the missing sheep occupied when the storm came on, and consequently know pretty well where to search the drifts for them. When the snow falls extremely light and feathery, the drift will hardly sustain a person's weight for a day or two afterwards, but in such cases there is not much danger of the sheep being suffocated under it; but when it falls in a softer state, but yet light enough to be drifted by a strong wind, the drift at once becomes consolidated and heavy, and then it is that there exists great danger of the sheep being quickly smothered.

There are two methods pursued in searching for the missing sheep when a snow-storm has subsided; one of them with dogs,—sheep-setters, or, as they are sometimes called, sheep-finders; the other, thus: three or four persons go in company, carrying with them a couple of long smooth poles, and also some spades or shovels. Those that carry the poles, walk along the drifted snow beneath which they suspect some of the sheep are buried, frequently pushing their poles gently through the snow, in order to ascertain, by the touch, the presence of the missing sheep; when, having made the discovery of one or more, the shovels are employed in opening a way by which to liberate the innocent prisoners. Persons accustomed to this prodding (probing) for sheep, as it is called, can readily distinguish by the touch of the pole the woolly coat of a sheep from any other substance,—even from the bushy and elastic heath, or the softer bent and mountain moss. This mode of search, however, is a slow and tedious process where there is a considerable breadth of drift, a great deal of time

necessarily being consumed in carefully examining a comparatively small space. Besides, it sometimes happens that the drifts are so deep that an ordinary pole will hardly penetrate them to the bottom, and in that case the system becomes altogether useless.

The employment of dogs to find the lost sheep is by far the better plan, where it can be effected. The sheep-setter is of no particular breed, though, for the most part, these dogs belong to the cur species. But there are so many varieties of the cur—or, at all events, so many coming under that very general term, that it would be impossible to define what peculiar class my father's dog, Corby the sheep-finder, belonged to. He was large and black, strong-limbed, long and lean bodied, shaggy-coated, with a little white on the breast, as well as between the eyes. His ears were precisely those of the common cur, and his tail—for he was not tailless—was both large and long. Corby from his puppyhood was a favourite in the family, certainly not on account of personal attractions, for these were by no means in his favour, but from sundry good qualities that he was early discovered to possess. He was docile, sagacious, courageous, and faithful, and when he grew up he exhibited an extraordinary sense of smelling, particularly as regarded sheep, and hence he soon became the most renowned sheep-setter through a wide range of country. This rendered him of so much account that it in a manner changed his destiny, for having been brought up with no other view than that of his being employed as an ordinary shepherd's dog, his superior qualities soon procured for him a higher distinction, and he became a privileged character in the sitting-room and parlour; scarcely any services were required of him, except after a severe snow-storm, when he was called upon to exercise his vocation, which, during many years, he lived to do, and with wonderful success.

It was not only upon our own farm and flock that Corby exercised the extraordinary powers nature had endowed him with, for his fame as a sheep-finder extended through all the surrounding parishes; and many were the messages and requests that his owner would permit him to be taken to the distant parts of the upland country, where portions of the sheep-flocks were often buried beneath the snow. We had a servant-boy, to whom the dog was much attached, and when it was convenient to spare the latter to exercise his abilities for the benefit of our neighbours, the former usually accompanied him, for it was not to be supposed that so faithful and sagacious a creature would voluntarily accompany entire strangers. Money, of course, my father would never accept for Corby's services, but the boy that used to accompany the sheep-finder was not so rigidly scrupulous, and many were the shillings and half-crowns that he pocketed in the course of a stormy winter.

The sagacious animal always took advantage of the wind, where that was practicable, and the moment he was told to 'seek the sheep—be careful,' his whole attention was bestowed upon those parts of the snow-drift that the parties pointed out to him. With his nose close to the surface of the snow, his eyes beaming with intelligence and anxiously watching every motion of the person that accompanied him, his ears in an attitude of listening, as if he expected to assist the sense of smelling by that of hearing, would he traverse the hard, soft, or slippery snowdrift. When he first ascertained that there *were* buried sheep somewhere in the vicinity, he would then examine, with peculiar caution, every part of the surrounding surface, until he appeared to have satisfied himself regarding the precise locality, and *then* he would commence scratching away the snow with all his might. This was a sure signal for those who carried the shovels to commence digging, but the dog was never satisfied unless he were allowed to continue his scratching, as if he were anxious to set the imprisoned sheep at liberty as soon as possible. Many dogs, and particularly those that have a cross of the terrier breed, that are occasionally employed in searching for sheep that have been overblown, the moment they get a sight of the sheep will endeavour to seize upon them with as much savageness as they would attack any wild animal; but Corby knew better than to act thus. In a single severe winter this dog has been known to have set (as finding the sheep in this manner is called) upwards of three hundred sheep, and though it may be true that a portion of them might have been discovered through other means, the probability is that he was the means of rescuing several scores that otherwise inevitably would have perished.

It might be supposed that where sheep are buried beneath eight or ten feet of compact snow, that they would be crushed beneath the surrounding weight, if not to immediate death, at least in so severe a manner that they could not long survive. This, however, is rarely the case; and except when the fall of snow is immediately succeeded by a thaw, and suffocation or drowning naturally ensues, very few, comparatively, perish on account of the great depth of the drift, the snow being so porous that respiration is carried on without much inconvenience. Experience has shown that, for the most part, when sheep that have sought shelter in some ravine or hollow perceive the snow rapidly increasing on and around them, they get upon their feet and attempt to shake it from their fleeces; and consequently in a standing position become finally enclosed in the drift. With the weaker portion of a flock this is seldom the case, for they commonly continue motionless where they have first lain down, in some sheltered situation, until the snow has accumulated so much that it would be impossible for them to rise did they make the attempt. The consequence of this is, that if they are not rescued for several days, they either perish through actual starvation, not being able to move at all or obtain the smallest particle of sustenance, or their limbs become stiff and paralyzed before death actually takes place. Those, however, that have been buried in the snow in a standing position, should they continue undiscovered several days, are generally found to have acquired sufficient room to turn themselves, and to be able to lie down and rise at pleasure; and where a few have happened to stand close together while the drift was forming, owing to the united warmth of their bodies, as well as their frequent movements, a rather considerable open space is commonly found surrounding them.

Instances have occurred of sheep being under the snow for three or four weeks, and still surviving, and even for longer periods. But in all such cases they have had the power of nibbling the short grass, grass-roots, and even a portion of the soil, on a space of a few superficial feet, through which means life has been sustained through so protracted a period of confinement. It has been ascertained also that, where sheep have actually been starved to death before they were discovered, extreme hunger had driven them to tear the wool from each other's backs, which only goes to prove the powerful influence of hunger even over these meek and innocent creatures. When sheep are discovered that have suffered a long confinement under the snow, on their being liberated it is necessary to administer food in small quantities, otherwise fatal consequences might ensue; and notwithstanding they may partly regain their wonted vigour in course of time, it rarely happens that such sheep ever afterwards appear in a perfectly healthy condition, and in the enjoyment of all their faculties.

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.

LONDON: CHARLES KNIGHT & CO., 22, LUDGATE STREET
Printed by WILLIAM CLOWES and SONS, Stamford Street.